

WHAT IS CLAIMED IS:

1. A yoke type magnetic head comprising:
a magnetoresistance effect film sensing a signal magnetic field from a medium;
a pair of magnetic yokes being magnetically connected to said magnetoresistance effect film and facing each other via a magnetic gap; and
a pair of electrodes being connected to said magnetoresistance effect film so that a sense current in a thickness direction of said magnetoresistance effect film is applied thereto, one of said electrodes being formed in said magnetic gap.
2. A yoke type magnetic head as set forth in claim 1, wherein each of said pair of magnetic yokes has a flat portion which faces said magnetic gap and which is substantially parallel to a medium facing surface, and said magnetoresistance effect film is formed on a plane which is substantially parallel to said medium facing surface.
3. A yoke type magnetic head as set forth in claim 1, wherein said magnetoresistance effect film is a current perpendicular to plane type giant magnetoresistance effect film.
4. A yoke type magnetic head as set forth in claim 1, wherein said magnetoresistance effect film is a tunneling magnetoresistance effect film.
5. A yoke type magnetic head as set forth in claim 1, wherein said magnetic yokes are electrically connected to said electrode formed in said magnetic gap.
6. A yoke type magnetic head comprising:
a magnetoresistance effect film, formed on a plane substantially parallel to a medium facing surface, sensing a signal magnetic field from a medium;
a pair of magnetic yokes facing each other via a magnetic

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gap, each of said pair of magnetic yokes having a flat portion which faces said magnetic gap and which is substantially parallel to a medium facing surface, said pair of magnetic yokes being electrically connected to said magnetoresistance effect film; and

a pair of electrodes which are electrically connected to said magnetoresistance effect film,

said magnetic yokes being magnetically and electrically connected to said magnetoresistance effect film, and said magnetic yokes also serving as one of said pair of electrodes.

7. A yoke type magnetic head as set forth in claim 6, wherein said magnetoresistance effect film is formed so that a sense current in a thickness direction of said magnetoresistance effect film is applied thereto.

8. A yoke type magnetic head as set forth in claim 7, wherein a non-magnetic electric conductor is formed in said magnetic gap, and said electric conductor is electrically connected to said magnetic yokes also serving as said electrode.

9. A yoke type magnetic head as set forth in claim 8, wherein said magnetic yokes also serving as said electrode are electrically grounded.

10. A yoke type magnetic head as set forth in claim 9, wherein said magnetoresistance effect film is a current perpendicular to plane type giant magnetoresistance effect film.

11. A yoke type magnetic head as set forth in claim 9, wherein said magnetoresistance effect film is a tunneling magnetoresistance effect film.

12. A yoke type magnetic head comprising:
a magnetoresistance effect film sensing a signal magnetic field from a medium;
first and second magnetic yokes being magnetically

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connected to said magnetoresistance effect film and facing each other via a magnetic gap; and

first and second electrodes being connected to said magnetoresistance effect film so that a sense current in a thickness direction of said magnetoresistance effect film is applied,

said magnetoresistance effect film being formed so as to straddle said magnetic gap,

said first electrode having a flat surface on the side of said magnetoresistance effect film,

a contact area of said first electrode with said magnetoresistance effect film being defined by the area of said magnetoresistance effect film, and

the area of said flat surface being greater than said contact area.

13. A yoke type magnetic head as set forth in claim 12, wherein said magnetoresistance effect film comprises a free layer, a pin layer, an antiferromagnetic layer for fixing magnetization of said pin layer, an underlayer, a cap layer and a spacer layer which is sandwiched between said pin layer and said free layer.

14. A yoke type magnetoresistance effect head as set forth in claim 13, wherein the area of each of at least said pin layer, said antiferromagnetic layer and said cap layer is defined so as to be smaller than the area of said free layer, and

said pin layer, said cap layer and said antiferromagnetic layer are formed on said magnetic gap.

15. A yoke type magnetic head as set forth in claim 12, wherein each of said first and second magnetic yokes includes a tip portion having a flat portion which faces said magnetic gap and which is substantially parallel to said medium facing surface, and a wing portion extending from a portion which is provided between said tip portion and said magnetoresistance effect film,

the area of said flat portion of said magnetic yokes being smaller than the cross-sectional area of an arbitrary cross

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section of said magnetic yokes which are substantially parallel to a medium facing surface,

said magnetic gap being formed between said medium facing surface and the formed surface of said magnetoresistance effect film,

the size of said magnetic gap on the side of the formed surface of said magnetoresistance effect film being greater than the size of said magnetic gap on the side of said medium facing surface, and

the formed surface of said magnetoresistance effect film being substantially parallel to said medium facing surface.

16. A yoke type magnetic head as set forth in claim 13, wherein a center of a medium facing surface of said magnetic gap is a center of a coordinate axis, an axis extending in a track cross direction from the center of the coordinate axis is X-axis, an axis extending in a bit length direction from the center of the coordinate axis is Y-axis, the length of said pin layer in the track cross direction is W_p , the length of said pin layer in the bit length direction is L_p , the length of said magnetic yoke on the side of the medium facing surface in the X-axis direction is W_{y1} , the length of said magnetic yoke on the side of the formed surface of said magnetoresistance effect film in the X-axis direction is W_{y3} , and the length of the tip portion of said magnetic yoke on the side of the formed surface of said magnetoresistance effect film in the Y-axis direction is L_{y2} ,

an end portion of said pin layer in the track cross direction, which has an x-coordinate expressed by $x = \pm W_p/2$, is defined in a region which is beyond a range of an end portion of said tip portion of said magnetic yoke, which has an x-coordinate expressed by $x = \pm (W_{y1})/2$, and which is within a range of an end portion of said magnetic yoke layer in the track cross direction, which has an x-coordinate expressed by $x = \pm (W_{y3})/2$, and

an end portion of said pin layer in the bit length direction, which has a y-coordinate expressed by $y = \pm L_p/2$, is defined in a region which is within a range of the end portion of the tip

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portion of said magnetic yoke, which has a y-coordinate expressed by $y = \pm(Ly2)/2$.

17. A yoke type magnetic head as set forth in claim 13, wherein a center of a medium facing surface of said magnetic gap is a center of a coordinate axis, an axis extending in a track cross direction from the center of the coordinate axis is X-axis, an axis extending in a bit length direction from the center of the coordinate axis is Y-axis, the length of said free layer in the track cross direction is Wf , the length of said free layer in the bit length direction is Lf , and the lengths of said tip portion of said magnetic yoke on the side of the formed portion of said magnetoresistance effect film in the X and Y directions are $Wy2$ and $Ly2$, respectively,

an end portion of said free layer in the track cross direction, which has an x-coordinate expressed by $x = \pm Wf/2$, is defined in a region which is beyond a range of $x = \pm(Wy2)/2$, and the end portion of said free layer in the bit length direction, which has a y-coordinate expressed by $y = \pm Lf/2$, is defined in a region which is beyond a range of $y = \pm Ly2/2$.

18. A yoke type magnetic head as set forth in claim 15, wherein said magnetoresistance effect film is electrically connected to said first and second magnetic yoke, and

said second electrode is electrically connected to said magnetic yokes.

19. A yoke type magnetic head as set forth in claim 13, wherein said bottom electrode is formed so as to be electrically connected to said free layer.

20. A magnetic disk unit including a yoke type magnetic head as set forth in claim 1.

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